

CHAPTER 4

ENVIRONMENTAL IMPACTS

INTRODUCTION

This chapter presents the environmental impacts or consequences of the management actions proposed under the three alternatives described in Chapter 2. These actions are being proposed as alternative ways of resolving the issues that pertain to allocation of BLM federal land resources, their use and protection in the Decision Area. BLM decisions about resource use and management in the Decision Area will be based on this impact analysis.

The alternatives include Alternative A (No Action), which represents the continuation of existing management practices defined in the *Rio Puerco Resource Management Plan* (RMP), and the *Final Protection Plan for Tent Rocks, an Area of Critical Environmental Concern*, with minimal modifications to meet the requirements of Presidential Proclamation 7394. Alternative B is the Proposed Action Alternative, which includes the agency-recommended management and continues most existing management while emphasizing values identified in the proclamation. Alternative C emphasizes an adaptive management approach that requires monitoring and provides for management changes keyed to the monitoring results.

The resources and uses listed in Table 4-1 have been considered under each alternative. (These include the “Critical Elements of the Human Environment” listed in the BLM’s *National Environmental Policy Handbook*, H-1790-1.) Only those resources or uses considered to have measurable levels of impacts are further discussed in this chapter. Those in the right-hand column of Table 4-1 have been determined to have no impacts, the impacts on them would be negligible, or the elements are not present in the Decision Area or Planning Area.

For the analysis, BLM staff members have used existing data, current methodologies, professional judgment, and projected actions and levels of use. The analysis takes into account the mitigation measures and stipulations described in Chapter 2.

Direct and indirect impacts are analyzed, as well as short-term uses versus long-term productivity, and irreversible and irretrievable commitments of resources. Cumulative impacts are summarized at the end of the impact discussion for each alternative. These impacts would occur as the result of past, present, and reasonably foreseeable future actions by federal, state, and local governments, private individuals, and entities in or near the Decision Area or Planning Area.

The following resource/use impact discussions are organized alphabetically under each alternative. Under the main heading for each use or resource, the headings for other resources/uses causing impacts on the main resource/use are listed. (Note: Where impacts to uses or resources in the larger Planning Area can be estimated, they are also discussed. However, BLM survey and knowledge of the inholdings and edgeholdings is less extensive because of limited access.)

Impacts from actions to be carried out under more than one alternative are discussed under the first applicable alternative. This discussion then is referenced under the other pertinent alternative(s). Where pertinent, the discussions address the five planning issues that were introduced in Chapter 1 as “areas of concern” for the Kasha-Katuwe Tent Rocks National Monument. These are land tenure adjustment, access and transportation, recreational activities, ecosystem restoration, and American Indian uses and traditional cultural practices.

TABLE 4-1

**RESOURCES AND USES POTENTIALLY IMPACTED
BY THE PROPOSED ACTION AND ALTERNATIVES**

Resources & Uses Likely to Be Impacted	Resources & Uses Not Present or Not Likely to Be Impacted
Access & Transportation American Indian Uses & Traditional Cultural Practices Cultural Resources Fire Management Lands & Realty (Land Tenure Adjustment) Livestock Grazing Noxious Weeds Recreational Uses Riparian Areas Sensitive Wildlife Species Social & Economic Conditions Unique Geologic Features Vegetation & Woodland Management Visual Resources Wildlife Habitat	Air Quality Areas of Critical Environmental Concern Environmental Justice Floodplains and Wetland Zones Hazardous or Solid Wastes Minerals Paleontology Prime or Unique Farmlands Soils Threatened & Endangered Wildlife Species Threatened, Endangered, & Special-Status Plants Water Resources Wild & Scenic Rivers (WSR) ^a Wilderness & Wilderness Study Areas Note: ^a Refer to Appendix I for the WSR evaluation of the Planning Area.

The emphasis of this chapter is to identify the environmental impacts likely to be created if the decisions proposed under the given alternative were implemented. This informs the managers and the public of the probable consequences of the decisions being considered.

- BLM Road 1011 through the Decision Area will remain open for access during established daylight hours.
- Staff and budget will be available to implement the actions proposed in this plan.
- The life of this plan is 15 to 20 years.

GENERAL ASSUMPTIONS

The following are the general assumptions used for impact assessment under all alternatives. Those associated with a single issue are included within the alternative discussion for that issue.

- Short-term impacts are those that would last for fewer than 4 years.
- Long-term impacts are those that would last for 4 years or more.
- Demand for recreation in the Decision Area will continue and increase.

ALTERNATIVE A

Access & Transportation

Roads would continue to be maintained by Sandoval County or the BLM, with minimal improvements to monument roads and trails, except that BLM Road 1011 would be paved if funding became available. Other roads and trails including existing primitive roads would remain open and continue to be minimally maintained.

Motorized vehicle access throughout most of the monument on primitive roads would continue to be permitted. Increased public access would result in trespass on nonfederal lands and roads created by unauthorized users on public lands. Access to remote areas could increase the possibility of public safety issues, especially in areas that were not easily accessible to emergency and rescue equipment.

The roads would provide motorized access to 3,092 acres within the monument, based on ROS categories. The semi-primitive, non-motorized category would include 1,032 acres, the balance of the federal lands within the monument.

Approximately 18.11 miles of roads would remain open for public use and about 1.05 miles would be open for limited use only. Approximately 8.26 miles of foot trails would remain open and about 0.4 miles would be closed.

Impacts from American Indian Uses & Traditional Cultural Practices

Over half the road miles are in portions of the monument for which high traditional use values exist. Infrequent short-term closures (usually lasting a few hours) could be requested on these or other roads and trails. (Note: These closures would be announced on the BLM website, the customer service telephone line and local radio stations, and on signs posted outside the gate at the monument entrance on Tribal Road 92. Visitors would be encouraged to go to nearby Cochiti Lake or the Cochiti Golf Course and Clubhouse until BLM Road 1011 was re-opened.) The impacts of these closures on access by the general public would be negligible.

Under Alternative A, the usual BLM consultation procedures would be followed, so affected tribes or pueblos would be consulted regarding their concerns on proposed access and transportation activities. Consultation would be consistent under any alternative selected, and would take place at the time of plan implementation. It would be conducted according to the BLM's American Indian consultation requirements and

the Cooperative Management Agreement with the Pueblo de Cochiti.

Impacts from Lands & Realty (Land Tenure Adjustment)

Under Alternative A an easement would be sought for 1.05 miles of road on privately owned inholdings within the monument boundary. This road easement would provide federal control of legal access for the main road through the monument.

Impacts from Recreational Uses

Alternative A would provide for continued intensive recreational use associated with existing roads and trails. As the result of the recreational traffic volumes into the Decision Area, improvement and maintenance of the 5.9 miles of BLM Road 1011 would be needed.

Impacts from Visual Resources

Alternative A would provide for continued use of the Decision Area for extensive visual resource viewing on and near existing roads and trails. Roads would not be closed nor public access impaired to protect visual resources.

Impacts from Wildlife Habitat

The miles of roads and trails would continue to fragment wildlife habitat, but habitat management would not impact access and transportation except in the form of traffic controls such as speed limits.

American Indian Uses & Traditional Cultural Practices

The principal impacts to this element under Alternative A would be the loss of privacy and intrusion resulting from increasing recreational visitation. Under this alternative the monument could receive as many as 150,000 visits per year by the 20-year end of the life of this plan. Under Alternative A, the BLM would not take action to limit or restrict use or control visitor numbers.

Impacts from Access & Transportation

Access and transportation decisions would contribute to the loss of privacy and create intrusions into traditional uses by making areas more or less available for recreation or other uses.

The figures in Table 4-2 identify factors affecting traditional use under each alternative. The higher numbers indicate greater probabilities for loss of privacy and intrusion except for "closed" roads and trails and non-motorized acres.

TABLE 4-2

**IMPACTS TO AMERICAN INDIAN USES
& TRADITIONAL CULTURAL PRACTICES UNDER THE ALTERNATIVES**

Impacting Factor	Alt. A	Alt. B	Alt. C
Visitor use (average visits per year, maximum)	150,000	50,000	50,000
Intensive recreational use (acres)	155	241	280
Roaded Natural areas (acres)	1,942	1,942	3,317
Semi-Primitive Motorized areas (acres)	1,150	972	68
Semi-Primitive Non-Motorized areas (acres)	1,032	1,210	739
Roads designated as "Open" (miles)	18.11	6.05	9.15
Roads designated for "Limited Use" (miles)	1.05	3.60	2.40
Roads "Closed" (miles)	0.00	9.51	7.61
Trails designated as "Open" (miles)	8.26	7.92	9.66
Trails designated as "Closed" (miles)	.40	2.14	0.40

Impacts from Cultural Resources, Fire Management, Unique Geologic Features, and Vegetation & Woodland Management

Privacy for traditional uses would also be impacted by management of these uses and resources. Under Alternative A, these impacts would be negligible. The BLM would follow the same general consultation practices with tribes and pueblos under all alternatives. However, there would be a greater possibility of archeological research involving excavation or collection of artifacts under Alternative A, so more incidents of consultation could occur.

Impacts from Lands & Realty (Land Tenure Adjustment)

Land tenure adjustments would likely reduce privacy and increase intrusions for those engaged in traditional uses of the Decision Area. The amount of those impacts would depend on

the uses permitted on nonfederal land, whether inholdings or edgeholdings. These uses can only be recommended in this plan, as the non-federal landowners would retain control of their land.

Cultural Resources

Impacts from Access & Transportation

Under Alternative A, 18.11 miles of roads would remain open and 1.05 miles would be open for limited use only. A total of 5.3 miles have been inventoried, with actions taken to protect two archeological sites that were adversely impacted by road maintenance along this segment. Under standard procedures, the BLM would not inventory the remaining 13.86 miles of roads, so any sites located along those routes could be affected by future maintenance.

About 8.26 miles of existing trails would remain open, of which 1.81 miles have been inventoried for cultural resources. The most serious potential effects of the trail system would be the indirect impacts discussed under “Impacts from Recreational Uses” below.

Impacts from Fire Management, and Vegetation & Woodland Management

The BLM’s Cultural Resources Protocol Agreement with the New Mexico State Historic Preservation Officer recognizes that less than Class III inventory coverage may be appropriate for some low-impact fire or fuels treatments. Based on the expected nature and density of cultural resources and on the kinds of effects anticipated, the BLM makes case-by-case judgments for these projects. Usually prescribed fires and fuel treatment projects that involve light off-road vehicle use or dragging of slash are subject to reconnaissance/sample surveys covering between 7 and 20 percent of the project area. Although these practices are reasonable, cultural resources still could be damaged by the effects of fire or other forms of disturbance related to vegetation and woodland management.

Impacts from Lands & Realty (Land Tenure Adjustment)

Cooperative Management Agreements for 1,278 acres of nonfederal surface within the Decision Area would take cultural resources into account, enhancing protection of those resources managed under the agreements. Acquisition and withdrawal of mineral rights would also help to protect cultural resources.

Acquisition of the 965-acre edgeholding would bring additional sites under federal protection and management. Acquisition of 1.05 miles of primary road easement would not have direct effects on cultural resources, but use and maintenance of transportation routes within this easement would have some impacts. These impacts are discussed above under "Impacts from Access & Transportation."

Impacts from Noxious Weeds

In the unlikely event that weed control measures seemed to result in significant new surface disturbance, these activities would be subject to standard cultural resources inventory and mitigation procedures.

Impacts from Recreational Uses

The direct impacts of recreational uses are relatively easy to identify and mitigate. Under Alternative A, direct impacts to cultural resources would result from the use of 8.26 miles of open hiking trails, as well as continued maintenance and operation of the existing Scenic Overlook and trailhead/picnic area. Any new construction would be subject to the usual cultural resources inventory requirements, with identified conflicts being resolved by the use of procedures described in the Protocol Agreement (or successor agreements) with the New Mexico State Historic Preservation Officer.

The indirect impacts of recreational use are much more difficult to address and without question would be the single greatest factor affecting cultural resources over the life of this plan. Despite prohibitions and educational efforts, some members of the visiting public would collect attractive potsherds, projectile points, and other artifacts. Under Alternative A, visitation could exceed 150,000 per year by the end of the 20-year life of this plan. The impacts of illegal collection would be cumulative and irreversible, resulting over time in the loss of archeological and historical sites.

The BLM can partially mitigate these indirect impacts through inventorying and documenting surface artifacts, as well as collecting outstanding specimens. Under Alternative A, the BLM would assign no special priority to additional proactive cultural resources inventory in the monument. Instead, this area would be evaluated on an equal basis with other areas managed by the Rio Puerco Field Office, taking into consideration the nature and importance of

cultural resources present, as well as the potential threat created by rising levels of visitation. However, the BLM would be more receptive to projects that involved excavation under this alternative, partially mitigating the effects of illegal artifact collection. Information lost in surface assemblages might be recovered through excavation.

Impacts from Unique Geologic Features

These features would be visited for observation and study. Trails and other facilities to accommodate visitation have the potential to impact cultural resources. However, these impacts would be mitigated by avoidance, inventory and/or documentation of surface artifacts, and collection of outstanding specimens.

Fire Management/Ecosystem Restoration

Impacts from Access & Transportation

Transportation routes and visitor accessibility within the monument would limit the BLM's ability to use fire management to increase vegetative diversity in some areas. This would also be true for acreages acquired or managed under Cooperative Management Agreements with non-federal landowners.

Impacts from American Indian Uses & Traditional Cultural Practices

Mitigation measures required for protecting these uses and practices would require adjustments in treatment methods (e.g., fire versus mechanical, treatment combinations), location, and/or timing. Overall, these adjustments would result in fewer acres being treated.

Impacts from Cultural Resources

Mitigation measures required to protect cultural resources would require similar adjustments in treatment as those discussed above for American Indian uses and traditional cultural practices. These measures also would result in fewer acres being treated.

Impacts from Lands & Realty (Land Tenure Adjustment)

Cooperative Management Agreements (CMAs) and/or acquisition of nonfederal land in the Planning Area would make additional acreage available for vegetative treatments. Treatment of part of the acreages designated as Fire Regime Condition (FRC) Classes 2 and 3 would be limited because of difficult access (e.g., the presence of slopes with an angle greater than 15 percent). Some of these areas could become accessible through future technological advancements (e.g., improvements in the design and capabilities of mechanical equipment). (Refer to Table 2-4 in Chapter 2 for acreages in each FRC class, and to Table 2-7 and Map 9 for information on those areas accessible for treatment based on slope.)

Impacts from Livestock Grazing

Retiring livestock grazing from 4,088 acres would result in an increase of fine fuels (e.g., grasses) to carry ground fires. This would create conditions favorable to fires during cooler seasons rather than the hot summer months, thereby influencing the size, intensity and severity of fires on portions of the Planning Area. In the long term, ground fires could improve watershed conditions and winter habitat for big game.

Impacts from Recreational Uses

The BLM would not use fire as a management tool for ecosystem restoration in the 155-acre intensive recreation use area (refer to Map 3 in Chapter 1).

Impacts from Vegetation & Woodland Management

As the result of access and slope limitations, untreated woodland stands in FRC Classes 2 and 3 would continue to be overstocked (as measured in tree stems per acre), and plant communities would be of low vigor on 3,514 acres. Direct effects associated with overstocking and low vigor would include the death of larger piñon trees due to drought, insect infestation, and

disease. Indirect effects would be an increase in the density of juniper trees, and a decrease of herbaceous plants in areas of tree encroachment (resulting from decreased water and nutrient availability, changes in soil chemistry, and loss of sunlight). Live tree diameters would decrease as large trees died and were replaced by seedlings and saplings.

However, thinning treatments would have direct beneficial impacts by improving tree vigor on 610 acres of public land (265 acres of FRC Class 2 and 345 acres of FRC Class 3) as the result of increased nutrient and water availability. (Note: These treatments would be applied under any chosen alternative; refer to “Continuing Management Guidance Common to all Alternatives” in Chapter 2.) Stands with minimal piñon tree stocking would benefit from juniper removal. Indirect effects would include the potential for rapid regeneration within areas where manual thinning was applied. (Note: Treated areas would require mechanical or fire maintenance 10 to 12 years after manual thinning.) In drier piñon sites on south-facing slopes, the bark beetle (*Ips pini*) could potentially breed in fresh slash created by manual thinning and attack adjacent live trees.

Lands & Realty (Land Tenure Adjustment)

The BLM recognizes that nonfederal landowners would continue to have valid existing rights on federal lands.

Impacts from Access & Transportation

A road easement across 1.05 miles of private land is needed to allow BLM to control access through the monument on BLM Road 1011.

Management of the monument would be more effectively handled if Cooperative Management Agreements could be negotiated with the owners of 1,278 acres of state and private inholdings in the Decision Area.

Livestock Grazing

Impacts from Lands & Realty (Land Tenure Adjustment)

Grazing leases would be retired on two allotments, involving 4,088 acres and a grazing preference of 303 Animal Unit Months. Retirement of the leases would reduce the lessees’ annual grazing preference by approximately 25 head of livestock.

Recreational Uses

Impacts from Access & Transportation

The 18.11 miles of existing roads and 8.26 miles of existing trails would provide ready public access to 155 acres considered to be a concentrated recreational use area (refer to Map 3 in Chapter 1). A total of 2,892 acres would be accessible by motorized vehicles. As the result of this access, little of the monument would provide an experience of solitude.

The 8.26 miles of trails would provide public access to 1,032 acres forming a dispersed use area beyond the concentrated use area. This dispersed use area would more favorably serve the needs of those who enjoyed hiking, and would positively impact recreational use within the monument by spreading it over a larger area.

Impacts from American Indian Uses & Traditional Cultural Practices

The monument may be closed to visitors for approximately 3 days per year for periods of a few hours to all day. (Note: These closures would be announced on the BLM website, the customer service telephone line and local radio stations, and on signs posted outside the gate at the monument entrance on Tribal Road 92. Visitors would be encouraged to go to nearby Cochiti Lake or the Cochiti Golf Course and Clubhouse until BLM Road 1011 was reopened.) Portions

of the monument would be closed to trail development or dispersed hiking to provide respect for traditional activities.

If temporary monument closures were needed to allow privacy for traditional activities, the BLM would modify sections of the Cooperative Management Agreement with the pueblo. Revised sections could include those regarding visitor use, facility development, location and use of trails, and non-motorized recreational opportunities.

Impacts from Cultural Resources

Under Alternative A, visitation could exceed 150,000 visits per year. Improvement of existing trails would be subject to the usual cultural resources inventory requirements.

Impacts from Lands & Realty (Land Tenure Adjustment)

Trespass use would continue to occur on private inholdings. Signing, restrictions on recreational use, and patrol and enforcement would be required to avoid trespass within the monument. This would increase the need to develop Cooperative Management Agreements with private landowners to reduce the level of trespass use.



Peralta Canyon stream 2005 spring runoff after an exceptionally wet winter.

Impacts from Riparian Areas

A total of 2.05 miles of Peralta Canyon stream channel lie within the monument (refer to Map 12). All waterflows are intermittent (occasional) and the stream channel is considered to be "Arroyo Riparian." This area would benefit from little or no visitor use, so the 3-acre study area would be fenced to discourage visitors from entering it.

Impacts from Unique Geologic Features

Within the 175.7 acres having unique geologic features (refer to Map 5 in the map section), hiking would be restricted to existing trails to minimize damage to these features.

Impacts from Visual Resources

Class II VRM designation would place some limitations on the development of recreational facilities.

Impacts from Water Resources

Drinking water at the monument would continue to be unavailable. Visitors would have to continue to bring their own water, or purchase it at the convenience store and gas station approximately 7 to 8 miles from the monument.

Impacts from Wildlife Habitat

Maintenance of the best possible wildlife habitat would result in the following types of restrictions on visitor use.

- Limiting visitors to day use;
- Limiting vehicle speeds;
- Restricting pets to vehicles or leashes; and
- Limiting the off-road access west of the Scenic Overlook to non-motorized use only.

Social & Economic Conditions

Impacts from Livestock Grazing

Retiring the federal lease portion on two live-stock grazing allotments would have social and economic impacts. The social impact would be minimal, because the lessees' ranching lifestyle would not be totally lost. The lessees would have the potential to own and graze some live-stock on private, state, and Forest Service lands. Economically, the two lessees would lose the gross income from 25 head of cattle. Estimated roughly because of annual price variations, the total lost income for both lessees together would be about \$10,650 per year (using 1999 to 2003 average calf prices and assuming a 500-pound calf and a 90-percent production rate).

Impacts from Recreational Uses

The recreational visitation to the monument has increased from 8,600 in 1998 to 50,300 in 2004, an increase of 473 percent (an average of almost 68 percent per year). Under Alternative A, these numbers would continue to increase, but most likely at about 5 to 10 percent per year. This increase in visitation would decrease the quality of the monument experience for local users. It would also negatively impact the area's social value for the Cochiti people, particularly those who participated in traditional activities.

However, the increased recreational visitation would add to the BLM fees collected. This would increase the federal funding for monument facility maintenance, and continue to support three to four part-time jobs related to monument management for members of the Pueblo de Cochiti. Visits to the monument are

usually short (a few hours), and because of the monument's location between Albuquerque and Santa Fe, the amount of tourist dollars that stay in the local economy would continue to be small.

Impacts from Unique Geologic Features

Because the unique geologic features are a major attraction, they contribute to the monument's social and economic values. Visitation for observing the unique geology would continue to be a social value that resulted in small amounts of service and products being purchased in the area, thus continuing to contribute small dollar amounts to the local economy.

Impacts from Visual Resources

The current Class II VRM designation would help retain the scenic values that contribute to the attractiveness of the Decision Area. Visitation and contribution of dollars into the local economy would be sustained.

Threatened, Endangered & Sensitive Wildlife Species

Federally Listed Species

The BLM has determined that no habitat exists in the Decision Area to support any listed species. Based on this analysis, the activities proposed under any alternative in this plan would result in "No Affect" on all the listed, proposed, or candidate species identified by the U.S. Fish and Wildlife Service as potentially occurring in Sandoval County, New Mexico (refer to Table 4-3).

TABLE 4-3

**DETERMINATIONS OF AFFECT UNDER THE ENDANGERED SPECIES ACT (ESA)
FOR THREATENED, ENDANGERED, AND CANDIDATE
WILDLIFE SPECIES IN SANDOVAL COUNTY, NEW MEXICO**

Species	ESA Classification	Determination of Affect
<u>Mammals</u> black-footed ferret	Endangered	No Affect
<u>Birds</u> Southwestern willow flycatcher	Endangered	No Affect
bald eagle	Threatened	No Affect
Mexican spotted owl	Threatened	No Affect
yellow-billed cuckoo	Candidate	No Affect
<u>Fish</u> Rio Grande silvery minnow	Endangered	No Affect

Sensitive Species

As shown in Table 3-11 in Chapter 3, thirteen sensitive wildlife species have been identified as potentially occurring or having suitable habitat within the national monument. Impacts to these species would be minimized by avoiding sensitive areas, timing construction activities outside of sensitive seasons, and conducting clearance surveys to avoid direct impacts. (Additional mitigating measures recommended below for impacts to wildlife habitat would also apply to sensitive species habitat.) These mitigation measures would be extended to all acquired lands within or adjacent to the monument.

Mammals

Nine sensitive bat species have some potential to occur within the boundaries of the national monument. Potential impacts to sensitive bat species could include disturbance of roosting bats during construction, possible loss of roosting habitat from vegetation removal, and disturbance of roosting and foraging individuals. No apparent hibernacula (winter shelters occupied during dormancy) have been documented in the monument. In the unlikely event that vehicles or construction equipment were to collapse caves,

crevices, or other roosting features, localized damage to roosting bats could occur. All construction activities in the national monument would be designed specifically to avoid damaging geologic features and large ponderosa pines, and therefore would not be expected to damage bat roosting areas. No direct impacts would be anticipated for bats roosting in human-built structures. Disturbance or removal of such structures with potential to serve as bat roosts would be avoided.

Birds

Four sensitive bird species have some potential to occur within the boundaries of the monument. No impacts to them would be anticipated as the result of the actions identified in this plan. Adverse impacts to nesting birds could result if construction activities were to occur within nesting territories or near active nests. Disturbances to birds during their sensitive nesting period could result in nest failure or abandonment. To avoid potential impacts, construction would occur outside the normal breeding season of most species (approximately April through July), or the proposed construction areas would be surveyed for nesting birds, and any found would be

avoided or construction delayed until nesting activities were complete.

Unique Geologic Features

Impacts from Access & Transportation

Under Alternative A, the maximum miles of roads and trails would be open to the public (18.11 miles of road and 8.26 miles of trails). This would expose the unique geologic features on 175.7 acres to the highest probability of short-term and long-term impacts in the form of erosion and other damage resulting from visitor use and accessibility. Signing and monitoring would help to prevent or decrease this type of impact.

If Cooperative Management Agreements could be developed with owners of nonfederal land to permit it, scientific study of unique geologic features could be expanded on as much as 1,096 acres (193.5 acres of inholdings and 903.4 acres of edgeholdings). This could also expand the area of potential impact (refer to Map 5 in the map section).

Impacts from Cultural Resources

Near the eastern edge of the monument are three areas (totaling 48.7 acres) that contain unique geologic features. Also present there are cultural resources, so any scientific group acquiring a permit to excavate them would be required to follow special stipulations to protect the unique geologic features. Periodic guided tours for each resource would benefit user groups as well as protecting both resources.

Impacts from Fire Management

Prescribed fire would create a temporary, short-term visual impact for monument users viewing the unique geologic features. These impacts would be the result of smoke and the areas blackened by fire.

Impacts from Lands & Realty (Land Tenure Adjustment)

Under any of the three alternatives analyzed in this plan, additional acreage with potential for geologic observation and study could become available through development of Cooperative Management Agreements. In addition to the 175.7 acres of unique geologic features already in federal ownership within the monument, 193.5 acres could become available for study on the private inholdings and 903.4 acres could become available on the Cañada de Cochiti edgeholding, for a total of 1,272.6 acres. (Note: Under Alternatives B and C, the BLM is recommending acquisition of these lands if willing sellers are available.)

Impacts from Recreational Uses

Continual and increased visitation and recreation in the monument would cause short- and long-term impacts to 175.7 acres containing unique geologic features (369.2 acres Cooperative Management Agreements were developed for the private inholdings). Users who traveled off existing roads and trails would create new pathways that would become compacted over time and lead other users to unique geologic areas. This would cause increased damage to and erosion of these features. Warning signs, close monitoring, and decreased visitor use would aid in mitigating this type of impact.

Future development of recreational facilities would create direct short- and long-term impacts to unique geology unless the facilities were designed, located, and built to avoid damage and erosion near these features. Monitoring would be needed to ensure protection of geologic resources.

Impacts from Wildlife Habitat

Allowing hunting in the Decision Area would create direct short-term and possibly long-term impacts from hunters walking off road in areas

with unique geology. These impacts would be in the form of erosion and other damage to these features. The use of signs and a BLM presence would help to mitigate this type of impact. (Note: Hunter numbers and permit seasons are controlled by the New Mexico Department of Game and Fish.)

Impacts from Visual Resources

Continued management of the monument under Class II VRM objectives would help to protect unique geologic features from disturbance.

Vegetation & Woodland Management

Impacts from Fire Management

Untreated woodland stands on 3,514 acres of federal land would be exposed to direct and indirect impacts from insects, disease, and age. An increase in the number of red-needle trees as the result of insect activity would increase the flammability of the woodland areas. The amount of dead and down wood would continue to increase, as would dense thickets of piñon and juniper. The woodland areas would be increasingly vulnerable to fire disturbance, which would likely be in the form of wind-driven events that would burn entire stands of larger trees. Such fires could occur at any time during the year when fuel and weather conditions combined with a source of ignition. The chances of suppressing these fires would decrease as levels of dead and down wood, piñon and juniper regeneration, and piñon-juniper encroachment increased in the Decision Area.

Suppression efforts occurring under the extreme conditions common to late May and June would be focused on wildland-urban interface areas, not on protecting natural resources. Risk to life, safety, property and resources would be high and would continue to increase over time as fuel continued to accumulate and additional homes were built in the interface areas. An accumulation of fuels on BLM-administered lands could

contribute to long-term cumulative effects caused by large, stand-replacing fires.

Applying thinning treatments on 610 acres would reduce the ability of fires to spread vertically and horizontally through woodland areas. These treatments would directly influence 4 percent of the Decision Area landscape to move towards attainment of FRC Class 1. Crown fires (in the treetops) would drop to the ground, and ground fire spread would be more controllable. The risk to the wildland-urban interface would decrease, and the wildlife habitat and visual resources functions served by untreated stands would be protected from complete loss. The indirect impacts of thinning would be an eventual shift to a grass understory, which would promote faster fire spread but at a much lower intensity.

Impacts from Noxious Weeds and Recreational Uses

The potential exists for indirect and long-term impacts from the introduction of noxious weed seeds or reproductive plant parts into treated or disturbed areas during management activities or by recreational users. Establishment of noxious weeds on the monument would cause irreversible impacts by further displacing the natural plant community structure and function. Conscientious application of the BLM's Rio Puerco Field Office weed policy would mitigate this problem.

Impacts from Visual Resources

Visual resource management (VRM) classes assigned within the monument would restrict to some small degree the types and extent of vegetative treatment areas. The specific impacts would result from the conflict between the management goals of the VRM classes assigned and the vegetative communities for which the Decision Area was being managed. The maintenance of a VRM Class II area would require a higher level of restriction. Table 4-4 shows the acreage of VRM Classes II and III under each alternative.

TABLE 4-4

**VISUAL RESOURCE MANAGEMENT CLASSES
FOR FEDERAL ACREAGE IN THE DECISION AREA,
BY ALTERNATIVE
(acres)**

VRM Class	Alt. A	Alt. B	Alt. C
Class II	4,124	3,030	2,004
Class III	0	1,094	2,120

Impacts from Wildlife Habitat

Big game winter habitat and migratory bird habitat have been identified as being desirable for the monument. The western half of the monument is identified as big game habitat, and essentially all of the Planning Area has migratory bird potential. Providing desirable habitats for these wildlife species would not interfere with woodland and vegetative treatments needed for the maintenance of land health requirements.

Visual Resources

Impacts from Fire Management/Ecosystem Restoration

Fire management has the potential to impact visual resources, depending on what is to be accomplished with the fire. Most of the negative impacts of fire on visual resources would be short term as the result of smoke and blackened areas. However, the long-term impacts of fire would improve the overall condition of the visual resources as understory and overstory vegetative conditions improved.

Impacts from Lands & Realty (Land Tenure Adjustment)

Without acquisition of the nonfederal lands within and contiguous to the monument, there would exist a potential for adverse impacts to the scenic values. Structures and other developments that did not blend with the features found in the surrounding monument landscape could be built on the nonfederal lands.

Impacts from Livestock Grazing

Removal of livestock from the 4,088 acres of federal lands would allow vegetation to gain vigor. Some range improvements that served no useful purpose would be removed, and sites previously occupied by these facilities would gradually rehabilitate and blend with the surrounding undisturbed landscape.

The elimination of livestock grazing from the federal lands administered by the BLM would result in the need to build 7.5 miles of new fence to contain livestock on state and private lands, preventing trespass on and misuse of monument resources. When these fences were built, the line created by the narrow swath of vegetation cleared or altered for fence installation would not greatly impact the monument's visual characteristics due to the vegetative communities in the area. Overall, with elimination of grazing, the expected increase in vegetation composition and production above the current levels, and the removal of some range improvements, long-term beneficial impacts on visual resources area-wide would be expected.

Impacts from Recreational Uses

Implementation of Alternative A would result in 4,124 acres or all of the federal land administered by the BLM within the monument continuing to be managed under VRM Class II. The monument's scenic values would be protected by limiting actions to those that could be low level, not attracting attention. None of the federal lands within the monument would be managed under other VRM classes.

The need to provide visitor support facilities and resource protection measures in the areas where intensive recreational use was occurring would result in changes that would attract attention but would not dominate the viewshed. Some natural appearance would be lost as the result of the visual effects of recreation activities and developments.

Impacts from Unique Geologic Features

The observation of unique geologic features is not expected to create negative impacts on the Decision Area's visual resources. Where geologic study was desired, special considerations would be needed to mitigate the impact of surface disturbance (e.g., screening using topographic and/or vegetative features).

+Impacts from Vegetation & Woodland Management

Ongoing vegetative treatments within the monument would create short-term negative visual impacts as the result of two factors: (1) the dis-



Indian Paintbrush is one of the many colorful plants found in the Monument.

turbances to the soil and vegetation created by the initial treatment methods, and (2) the changes in landscape texture caused by reducing the density of piñon-juniper woodlands. Over the long term, however, a healthier and more diverse plant community would be created with greater ground cover. This would result in a more visually appealing landscape with greater variety in color, texture and composition.

Water Resources

Impacts from Access & Transportation

The continued presence and use of roads would continue to have direct and indirect impacts on watershed stability and water quality. These impacts would include erosion from road surfaces and ditches, concentration of flows into channels, and transport and delivery of sediment in stream channels. Actual erosion and sedimentation amounts would depend on road construction standards and frequency of maintenance. Under Alternative A, continuing road maintenance and implementation of road upgrades would constitute Best Management Practices for the protection of water quality.

Impacts from Livestock Grazing

Retiring two grazing leases on 4,088 acres would improve watershed and stream channel conditions as the result of decreased grazing use of ground cover. The cumulative impacts of grazing removal, vegetation treatments, and timely road maintenance would improve watershed conditions in both the short and long term. Vegetation treatments carried out with equipment having wheels or tracks would cause short-term disturbance to the soil surface that would temporarily increase erosion and sedimentation.

Impacts from Recreational Uses

With visitation reaching or exceeding 150,000 people per year, the potential for vegetative trampling and the development of social trails would occur. These activities would result in

increased erosion and delivery of sediment into local stream channels.

Impacts from Vegetation & Woodland Management

Vegetation treatments that resulted in a shift toward more herbaceous plant communities on treated sites would improve watershed stability.

Wildlife Habitat

Impacts from Access & Transportation

Under continued management of the monument, with approximately 18.11 miles of roads on the 4,124 federal acres, road density would be 2.8 miles of road per square mile of land. A total of 8 miles of trails would be used in the monument, for 1.25 miles of trail per square mile of land. Both sources of wildlife habitat fragmentation would reduce habitat quality.

Impacts from Recreational Uses

The monument contains no known critical or limiting habitat for wildlife species within the context of the Pajarito Plateau, Jemez Mountains, or Rio Grande Valley, and its small size reduces any overall impacts to any species present as affected local individuals or populations can relocate outside the monument. However, both the original ACEC Protection Plan and Proclamation 7394 include the protection of habitat for non-game birds and improvement of big game winter habitat as primary goals. Therefore it is important to control the loss of individuals or local populations of wildlife species currently existing within the monument, and to prevent their future decline.

Most direct impacts to wildlife would come from interactions with the visiting public, especially in the areas with the highest visitor use. These interactions would be localized around the developed recreation sites, including the main access road (BLM Road 1011), parking areas, picnic areas, and the Scenic Overlook. These areas collectively amount to approximately 215

acres or nearly 5 percent of the federal area of the monument. Impacts would take the form of disturbance to breeding birds, trampling of small animals, attacks on wild animals from pets, vehicles running into or over animals on the access road, legal hunting and poaching of game species. Some of these direct impacts would be unavoidable because of the proximity of concentrated human use.

However, a few actions would help mitigate these impacts, including the following.

- Developing a "Watchable Wildlife" plan for the monument that emphasizes ethical viewing practices;
- Maintaining current seasonal and day-use restrictions for BLM Road 1011;
- Modifying, replacing, or removing all barbed-wire fences in or around the monument to conform to current BLM standards for occupied big game range; and
- Building a new boundary fence on the western and southern sides of the monument to control livestock trespass from the surrounding lands.

Because of the monument's small size and position on the lower edge of the Pajarito Plateau, significant indirect, cumulative, and/or long-term impacts to the area's wildlife would not be anticipated. Localized indirect impacts within monument boundaries would include habituation of wildlife species to the presence of human visitors, and loss of habitat as the result of increasing human use of the monument.

Most wildlife habituation problems can be corrected by keeping facilities clean of edible materials, installing animal-proof garbage facilities, and educating the public about the dangers of feeding wild animals. Maintaining the day-use only restrictions would also help by limiting wildlife exposure to humans. Educational signs and other materials relating to snakes and appropriate wildlife viewing activities would help to decrease habituation as well.

Mitigating the loss of habitat that would result from increased visitor use may require future restrictions on the number of visitors in the

monument at any given time. This may also require limiting visitor access to various portions of the monument.

Habitat fragmentation and degradation from visitor use and the expansion of surrounding communities would be offset to some degree by the removal of livestock grazing. An additional 303 AUMs of forage would be available for use by wildlife into the indefinite future.

Impacts from Vegetation & Woodland Management

Wildlife species and the types of habitat needed or desirable would influence the extent and type of woodland and/or vegetative treatments to be used. Big game winter and migratory bird habitat are two types of habitat identified as desirable for this area. The western half of the monument has been identified with big game development and essentially all of the area has migratory bird potential.

Vegetation treatments on 610 acres of federal land in the monument would have short-term effects on the quantity of wildlife habitat available. However, these treatments also would be expected to make a long-term improvement in both the quantity and quality of this habitat.

Cumulative Impacts Under Alternative A

Cumulative impacts could result regarding each of the five issues being addressed in this plan. (These issues were presented in Chapter 1 in the section entitled, “Planning Issues.”)

Issue 1: Land Tenure Adjustment

Assuming willing landowners, Cooperative Management Agreements (CMAs) would increase management capabilities for protecting and using the monument’s values on 5,402 acres (up from 4,124 acres). This would create a cumulative management capability.

Approximately 6,400 acres of what had been BLM-managed public land as part of the original

Tent Rocks Special Management Area and managed with the Tent Rocks ACEC (now the monument) was awarded to the Santo Domingo Pueblo as a part of a land claims settlement. This transfer is a part of the cumulative impacts of land tenure adjustment in this area in recent years.

Issue 2: Access & Transportation

CMAs on inholdings would result in a few additional miles of road (number undetermined) that would help to disperse the visitors and provide access to additional resources.

Issue 3: Recreational Activities

CMAs would increase recreational opportunities, reduce trespass on private property by visitors, and increase the acreage potential for intensive use areas.

Visits to the national monument would result from Cochiti Lake visitors; these numbers could reach 500,000 visits based on records from recent years. Visits to the area occur in the Santa Fe National Forest, the Dome Wilderness and the Bandelier National Monument. Visitor use figures for these areas are not clearly identified relative to location.

Issue 4: Ecosystem Restoration

CMAs would increase potential areas for vegetative treatments. The U.S. Forest Service also would be expected to have treatment areas on the Santa Fe National Forest, but the acreage and location have not been specified.

Issue 5: American Indian Uses & Traditional Cultural Practices

CMAs would make additional cumulative acres available for these uses and traditional practices. Some of the inholding acres and approximately 25 percent of the edgeholdings identified for acquisition contain high-value traditional use areas. Traditional use lands are likely to exist in adjoining Forest Service and Pueblo Indian land

areas, but only the Pueblo people know where or to what extent these lands exist.

Intrusions by visitors in high-value traditional use areas could result in permanent loss of some American Indian traditions.

The land transfer discussed above under “Land Tenure Adjustment” is also part of the cumulative impacts to American Indian uses and traditional practices in recent years.

ALTERNATIVE B

Access & Transportation

The road and trails management program would continue with minimal improvements to these means of access in the monument. Roads would be designated as “Open” or “Limited” (open for limited use only), or they would be designated as “Closed” and would be rehabilitated by natural or mechanical processes. The BLM and/or Sandoval County would continue to maintain roads that were designated as “Open.”

To enhance and protect American Indian uses and traditional cultural practices, unique geologic features, water quality, visual resources, and the ecological condition of woodlands and other vegetation, the BLM would substantially reduce the number of miles of roads under Alternative B. Approximately 6.05 miles of roads would be designated as “Open” for public use and about 3.6 miles would be designated as “Limited” (open for limited use only). This would be a reduction of nearly 50 percent of the total road miles available for public and/or administrative use, from 19.16 miles under Alternative A to 9.65 miles under Alternative B.

Approximately 9.51 miles of roads would be closed, with Best Management Practices being used to restore better ecological conditions where erosion has been a problem. Some of the roads to be closed have shown natural recovery capabilities that would be allowed to continue. The miles of foot trails that would remain open would be reduced by .34 miles to 7.92 miles.

These road changes would reduce the acreage available within the ROS motorized category by approximately 178 acres and increase the non-motorized area by the same amount. Decreased public access would result in reduced trespassing on nonfederal land. Reduced access to remote areas would decrease the possibility of public safety concerns, but would increase the number of areas that were not easily accessible to emergency and rescue equipment.

Impacts from American Indian Uses & Traditional Cultural Practices

Under Alternative B, many of the 9.51 miles of roads that would be closed would limit access to areas with high traditional values. Infrequent, short-term closures could be requested on “open” roads and trails. These impacts on public access and transportation would be negligible as they would affect less than one percent of the total visitation time.

Consultation under each alternative would be according to the BLM’s American Indian Consultation requirements and the agency’s Cooperative Management Agreement with the Pueblo de Cochiti. This consultation would take place at the time of plan implementation. Affected tribes or pueblos would be consulted regarding their concerns about proposed access and transportation activities.

Impacts from Cultural Resources

Standard cultural resource practices would require inventory of closed roads before surface-disturbing rehabilitation work. The special cultural resources requirement for inventory of existing roads before maintenance would require Class III survey of an additional 50 acres adjacent to 4.25 miles of roads.

Impacts from Lands & Realty (Land Tenure Adjustment)

Under Alternative B, the BLM would seek a road easement for 1.05 miles of road on privately owned inholdings within the monument boundary. This easement would provide federal

control of legal access for the main road (BLM Road 1011) through the monument.

Impacts from Recreational Uses

Under Alternative B, the BLM would allow two-thirds fewer visitors (about 50,000 per year) than would be allowed under Alternative A (up to 150,000 per year). This would amount to allowing access for the equivalent of year 2004 recreational use on half the current available road miles of access. Access would be provided to 241 acres used primarily for intensive recreation. The ROS Semi-Primitive Motorized area would be reduced by 178 acres. Improvement and maintenance of the 5.9 miles of BLM Road 1011 would be needed as the result of the recreational traffic volumes in the area.

Impacts from Visual Resources

Alternative B would provide extensive visual resource viewing associated with designated roads and trails. Maintenance of the 5.9 miles of BLM Road 1011 would be needed as the result of the recreational traffic volumes into the area. Roads would not be closed nor access impaired to protect visual resources.

Impacts from Wildlife Habitat

In part to protect wildlife habitat, 2.1 miles of road in the northwest portion of the Decision Area would be designated for “limited” use only. This designation would limit access by the general public to this part of the monument.

American Indian Uses & Traditional Cultural Practices

The principal impacts to American Indian uses and traditional cultural practices under Alternative B would be the loss of privacy and some intrusion resulting from recreational visitation and the access provided for this visitation. The BLM does not propose direct action to limit or restrict use, or to control visitor numbers under Alternative B, the agency would use indirect

actions such as media and education to replace the rate of growth in visitor numbers.

Table 4-2 (under Alternative A) identifies factors affecting traditional uses under each alternative. In addition to the uses discussed below, intrusions and loss of privacy related to traditional uses would be influenced by fire management practices, observation and study of unique geologic features, and vegetation and woodland management practices.

Consultations with tribes and pueblos would be the same under all alternatives, as described above under “Access and Transportation.”

Impacts from Access & Transportation

Access and transportation decisions would result in either privacy for or intrusion into traditional uses by making areas more or less accessible. Reductions in the miles of roads and trails open under Alternative B would result in fewer intrusions into traditional uses and practices in the Decision Area.

Impacts from Cultural Resources

A lower possibility of archeological research involving excavation or collection of artifacts would exist under Alternative B than under Alternative A. Therefore, this type of potential intrusions into traditional practices and uses would be reduced under Alternative B.

Impacts from Lands & Realty (Land Tenure Adjustment)

Land tenure adjustments would likely influence privacy and intrusion related to traditional uses and practices. However, the magnitude of those impacts would be related to uses permitted on acquired land, whether inholdings or edgeholdings. These uses have not been determined, but approximately a third of the acreage in the northern edgeholding (the Cañada de Cochiti Grant) has been reported as having high traditional values.

Cultural Resources

Impacts from Access & Transportation

Under Alternative B, 6.05 miles of roads would be designated as “Open,” while 3.6 miles would be designated as “Limited” (open for limited use only). The BLM has inventoried a total of 5.3 miles of road, and has taken actions to protect the archeological sites adversely impacted by road maintenance along BLM Road 1011. If archeological sites were located along the remaining 4.35 miles of road, maintenance of the road could damage or destroy them. Under Alternative B, the remaining sections of road designated as open or open to limited use would be inventoried by 2008. Any rehabilitation activities associated with closures of 9.51 miles of road would also be subject to cultural resources inventory and mitigation under the terms of the BLM’s cultural resources protocol agreement with the State Historic Preservation Officer.

About 7.92 miles of existing trails would remain open, of which 1.81 miles have been inventoried for cultural resources. The most serious potential effects of the trail system would be the indirect impacts (illegal collection) discussed in “Impacts from Recreational Uses” above under Alternative A. Mitigation would consist of inventorying a 60-meter-wide corridor centered on these trails and carefully recording any sites found there. Closure of 2.14 miles of trail could also require inventory, depending on the rehabilitation measures proposed.

Impacts from American Indian Uses & Traditional Cultural Practices

Under Alternatives B and C, the BLM would discourage projects that involved excavation or collection of artifacts. This policy could limit opportunities for archeological research. If the Cañada de Cochiti edgeholding was acquired, this limiting provision would apply to a large segment of the archeological record in this region.

Impacts from Fire Management, Noxious Weeds, Unique Geologic Features, and Vegetation & Woodland Management

The impacts on cultural resources from managing these other uses and resources would be the same under Alternative B as those discussed above under Alternative A.

Impacts from Lands & Realty (Land Tenure Adjustment)

Acquisition and withdrawal of mineral rights would help protect cultural resources and would bring additional sites under federal protection and management. Acquisition of 1.05 miles of easement along BLM Road 1011 would not have direct impacts to cultural resources, but use and maintenance of transportation routes within this easement would have some impacts. These are discussed above under “Impacts from Access and Transportation.”

Impacts from Recreational Uses

The nature of recreational impacts to cultural resources is discussed above under Alternative A. Under Alternative B, visitation would be restricted to approximately 50,000 people per year. This decreased visitation would result in fewer direct impacts to cultural resources than those expected under Alternative A.

The BLM could partially mitigate indirect impacts (illegal collection) through inventory and documentation of surface artifacts, as well as collection of outstanding specimens. Under Alternative B, the BLM would require inventory of expanded buffer areas around all recreational developments for activities done on foot (e.g., hiking, informal picnicking, sightseeing). Cultural resources inventories for parking areas, scenic viewing areas, developed picnic areas and similar developments would include a 100-meter-wide buffer area. For hiking and equestrian trails, a 30-meter buffer would be inventoried, resulting in information being collected from a 60-meter-wide corridor.

Under this alternative, the BLM would maintain a restrictive policy toward projects involving collection or excavation of cultural resources not directly threatened. Archeological research within the monument would have to rely primarily on inspection and analysis of surface assemblages, so indirect impacts (illegal collection) affecting such assemblages would be more serious under Alternative B than under Alternative A.

Fire Management/Ecosystem Restoration

Impacts from Access & Transportation

The impacts of access and transportation on fire management under Alternative B would be reduced from those under Alternative A, as fewer miles of roads and trails would be open for visitor use. Fire management could be used to increase vegetative diversity in more of the Decision Area, as visitors would not likely be present in areas with closed roads and trails.

Impacts from American Indian Uses & Traditional Cultural Practices, Cultural Resources, and Lands & Realty (Land Tenure Adjustment)

Impacts on fire management from these other uses and resources under Alternative B would be the same as those discussed above under Alternative A.

Impacts from Livestock Grazing

Retiring livestock grazing from 4,088 acres would provide regrowth opportunities for fine fuels (e.g., grasses) on this acreage, resulting in a more frequent fire return interval and creating conditions favorable to fires during cooler seasons rather than in hot summer months. This would reduce the size, intensity, and severity of fires on portions of the Planning Area.

In the long term, the fire-suppression activities associated with the protection of range improvements would no longer be needed. This would improve watershed conditions and winter habitat for big game.

Impacts from Recreational Uses

The BLM would not use fire as a management tool for ecosystem restoration in the 241-acre intensive recreation use area. (Refer to Map 3 in Chapter 1.)

Impacts from Vegetation & Woodland Management

Under Alternative B, the type of direct and indirect impacts discussed above under Alternative A would occur on approximately 13,469 acres of federal, state and private land in FRC Classes 2 and 3 (3,444 acres federal; 511 acres state; and 9,525 acres private). Approximately 12,658 acres of FRC Class 2 and 811 acres of FRC Class 3 would not be treated. The absence of livestock grazing would have direct effects on the untreated areas, resulting in an increase in herbaceous ground cover. However, the stem densities and degree of tree canopy cover on the untreated areas would prevent herbaceous species from growing there, so the overall increase of these species would be less than what would occur in the treated areas.

The type of direct and indirect impacts to the treated woodland stands under Alternative A would also occur under Alternative B on approximately 2,166 acres of public, state and private land. Tree thinning treatments would be applied to 610 acres of federal land, 10 acres of state land, and 1,546 acres of private land. On state and private lands, landowners would be consulted regarding treatments directly, or Cooperative Management Agreements would be set up. The absence of annual (yearlong or seasonal) livestock grazing in the treated areas would result in an increase of herbaceous ground cover.

Lands & Realty (Land Tenure Adjustment)

The BLM recognizes that nonfederal landowners would continue to have valid existing rights on federal lands.

Impacts from Access & Transportation, and Water Resources

The impacts on lands and realty under Alternative B from these other uses and resources would be the same as those discussed above under Alternative A.

Impacts from American Indian Uses & Traditional Cultural Practices

The Pueblo de Cochiti has indicated that a sizeable part of the Cañada de Cochiti Grant is an area of traditional interest. If the BLM acquired this edgeholding, the agency would work with tribal members to ensure that this interest was considered.

Impacts from Minerals

The BLM recommends that the 9,584 acres of minerals not currently managed by the agency be acquired from willing sellers and withdrawn from mineral entry. Without acquisition, the potential would continue to exist for future development that would have long-term adverse impacts on monument values. Ownership associated with the inholdings would involve 837 acres of all minerals, with 9,268 acres of minerals (other than gold, silver and quicksilver/mercury) under edgeholdings.

Impacts from Recreational Uses

Acquisition of an easement across 1.05 miles of private land would ensure BLM administrative access to the northwestern portion of the monument.

Acquisition of the Cañada de Cochiti edgeholding by the BLM would complete a federal land bridge from the Kasha-Katuwe Tent Rocks National Monument, north to the Santa Fe National Forest, Bandelier National Monument, and the Valles Caldera National Preserve. Consolidation of federal lands in this corridor would provide management continuity to the monument and allow the BLM to manage the monument lands for protection of their geological, ecological, historical, cultural, recreational, and

biological resources, as well as enhancing opportunities for environmental education and ecosystem management.

Impacts from Visual Resources

Acquisition would provide additional scenic values associated with the nonfederal lands to be enjoyed publicly, and place those lands under visual resource management objectives.

Livestock Grazing

Impacts from Lands & Realty (Land Tenure Adjustment)

The impacts on livestock grazing would be the same under Alternative B as those discussed under Alternative A above.



Winter hikers enjoy the Monument.

Recreational Uses

Impacts from Access & Transportation

The 9.65 miles of roads and 7.92 miles of trails designated as “Open” would provide ready access to 241 acres considered to be a concentrated recreational use area. A total of 2,914 acres would have motorized access, while 1,210 acres would form a dispersed use area more favorably

serving the needs of those who enjoyed hiking or activities not dependent on motorized vehicles. As a result of the access, little of the monument area would provide an experience of solitude.

Impacts from American Indian Uses & Traditional Cultural Practices, Lands & Realty (Land Tenure Adjustment), Unique Geologic Features, and Wildlife Habitat

Under Alternative B, the impacts of these other uses and resources would be the same as those discussed above under Alternative A.

Impacts from Cultural Resources

Standard cultural resource practices would require survey of a 15-meter-wide strip along hiking and equestrian trails. Under Alternative B, survey of expanded buffer areas would require 149 acres of Class III inventory along 6.32 miles of trails, rather than the 38 acres that would be surveyed under standard practices.

The impact of an expanded cultural resources buffer survey around scenic viewing areas, picnic areas and similar development would depend on their size. As an example, a facility 100 meters by 100 meters in size would require survey of 2.4 acres under standard practices, but 21 acres total survey under Alternative B.

Impacts from Riparian Areas

Recreational activities such as hiking and picnicking would be prohibited along 1.89 miles (approximately 7 acres) of the Peralta Canyon stream channel that would be set aside for the potential establishment of riparian habitat. Designated trails would not be built, nor dispersed hiking allowed in these areas.

Impacts from Visual Resources

VRM Class II designation would place some limitations on the development of recreational facilities. However, under Alternative B, 1,094

acres designated as VRM Class III would be available for recreational facility development.

Impacts from Water Resources

Through developing water sources that met health and safety requirements, the BLM would provide drinking water of sufficient supply and quality to meet the needs of the visiting public. A total water requirement has not been estimated.

Social & Economic Conditions

Impacts from Livestock Grazing, Recreational Uses, and Unique Geologic Features

The impacts to social and economic conditions from managing these uses and resources in the Decision Area under Alternative B would be the same as those described above for Alternative A.

Impacts from Visual Resources

Implementing Alternative B would provide a VRM Class III designation for 1,094 acres within the Decision Area. This would cause potential adverse impacts to scenic values from the placement of structures and developments that did not blend with the features found in the surrounding landscape. This reduction in the visual values of the area would likely have a small impact on social conditions, although it would not likely impact economic conditions.

Threatened, Endangered & Sensitive Wildlife Species

The impacts on these species of the actions proposed under Alternative B would be the same as those discussed above under Alternative A, with the following exception. If the BLM acquired the private and state inholding(s), an additional 1,278 acres within the monument would be protected from the possibility of habitat fragmentation that could otherwise result from the development of those lands.

Unique Geologic Features

Impacts from Access & Transportation

Closing unnecessary roads and trails would help to prevent access to 175.7 acres of unique geologic resources, possibly preventing damage and erosion to these features in the short and long terms.

Impacts from Cultural Resources, Fire Management, Lands & Realty (Land Tenure Adjustment), Recreational Uses, and Wildlife Habitat

The impacts under Alternative B from managing these uses and resources would be the same as those described above for Alternative A.

Impacts from Visual Resources

Continuing to manage 3,030 acres of land within the monument under VRM Class II objectives would help to protect the areas with unique geologic features from disturbance.

Vegetation & Woodland Management

Impacts from Fire Management

For the impacts of insects, disease and age in the untreated woodland stands, refer to the discussion of the impacts from fire management on vegetation and woodland management above under Alternative A. Thinning treatments proposed under Alternative B would have the same types of direct and indirect impacts as those discussed under Alternative A, but the impacts would occur on 2,166 acres (610 acres federal, 10 acres state, and 1,546 acres private). These fuel treatments would directly cause 14 percent of the Planning Area's landscape to move towards attainment of FRC Class 1.

Impacts from Livestock Grazing

The use of short-term livestock grazing would benefit long-term vegetative management within

the monument by increasing the growth of native plants.

Impacts from Noxious Weeds, Recreational Uses, and Wildlife Habitat

Refer to the discussions of impacts from these elements above under "Vegetation and Woodland Management" for Alternative A.

Impacts from Visual Resources

Continuing to manage 3,030 acres of the monument under VRM Class II objectives would help to protect the areas with unique geologic features from disturbance.

Visual Resources

Impacts from Fire Management/Ecosystem Restoration, Lands & Realty (Land Tenure Adjustment), Livestock Grazing, Unique Geologic Features, and Vegetation & Woodland Management

The impacts on the visual resources in the Decision Area from managing these other resources and uses would be the same under Alternative B as those discussed above under Alternative A.

Impacts from Recreational Uses

Implementation of Alternative B would result in 3,030 acres or 73 percent of the federal land administered by the BLM within the monument being managed under a VRM Class II designation. The monument's scenic values would be protected by limiting actions to those that could be low level, not attracting attention.

The remaining 1,094 acres of federal land administered by the BLM would be assigned VRM Class III, which would allow for expansion of recreational visitor use facilities and access routes. Providing visitor support facilities and resource protection measures in the areas where intensive recreation use was occurring would result in changes that would attract attention but

would not dominate the viewshed. However, the visual effects of recreational activities and developments would contribute to the loss of the general natural appearance in these Class III areas (refer to Map 15 in the map section).

Water Resources

Impacts from Access & Transportation

Alternative B would offer fewer miles of road open for public use than Alternative A. The closing and restoration of existing roads would directly reduce some of the erosion and sediment delivery to stream channels in both the short and long term. Roadbed restoration or stabilization would bring a certain number of acres of vegetative production back onto the landscape, enhancing non-motorized types of recreation.

Impacts from Lands & Realty (Land Tenure Adjustment)

With the acquisition(s) of state and/or private inholdings, four wells would also be acquired. The BLM would register with the State Engineer's Office for the water rights associated with these wells.

Impacts from Livestock Grazing

The retirement of the grazing leases on 4,088 acres would contribute to improved watershed and stream channel conditions, as the vegetative cover of the area improved.

Under Alternative B, short-term periods of livestock grazing could be used as needed to help achieve vegetative/ecosystem restoration objectives. Some short-term disturbance to the soil surface would occur, but over the long term, this use by grazing livestock would result in greater growth of native plant communities. This plant growth could result in improved watershed conditions.

Impacts from Recreational Uses

Under Alternative B, the BLM would develop water sources to provide drinking water that met the supply and quality needs of the visiting public. A total water requirement has not been estimated.

Impacts from Vegetation & Woodland Management

The impacts of this use on water resources under Alternative B would be the same as those discussed above under Alternative A.

Wildlife Habitat

Impacts from Access & Transportation

Continued management of the monument with approximately 9.65 miles of roads on the 4,124 federal acres, road density would be 1.5 miles of road per square mile of land. A total of 8 miles of trails would be used in the monument, for 1.25 miles of trail per square miles of land. Both sources of wildlife habitat fragmentation would reduce habitat quality.

Impacts from Lands & Realty (Land Tenure Adjustment)

If the BLM acquired 1,278 acres of private and state inholdings in the Decision Area, and/or 10,233 acres of private edgeholdings in the Planning Area, protection against future habitat fragmentation that could result from the development of these lands would be provided. The acquisition of edgeholdings would also help by providing a buffer of land that would not be developed but would be available for use by the monument's wildlife.

Impacts from Recreational Uses

Most direct and indirect impacts to wildlife under Alternative B would be the same as those

discussed above under Alternative A. Some of these direct impacts would be unavoidable because of the proximity of concentrated human use.

However, a few actions would help mitigate these impacts, including the following.

- Maintaining current day-use and seasonal restrictions.
- Limiting the speed of vehicles accessing the area to allow motorists sufficient time to react to animals stepping into the road.
- Limit the off-road access to the west side of the monument beyond the Scenic Overlook to non-motorized use only.

Impacts from Vegetation & Woodland Management

Impacts on wildlife habitat from the actions proposed under Alternative B would be of the same type as those discussed above under Alternative A. However, under Alternative B, additional acreage of woodlands would be thinned (10 acres of state land and 1,546 acres of private land). In the long term, more acres of wildlife habitat would benefit from these treatments.

Cumulative Impacts Under Alternative B

Cumulative impacts would result for each of the five of the issues being addressed in this plan. In large part these cumulative impacts would result from acquiring adjoining lands (assuming willing sellers) and managing them to complement the protection and use of monument values.

Issue 1: Land Tenure Adjustment

The acquisition of inholdings would increase the acres managed for monument values from 4,124 to 5,402. The acquisition of recommended edgeholdings would increase the area protected for use and conservation of monument values to 15,635 acres.

Approximately 6,400 acres of what had been BLM-managed public land in the original Tent

Rocks Special Management Area and managed with the Tent Rocks ACEC (now the monument) was awarded to the Santo Domingo Pueblo as a part of a land claims settlement. This is a part of the cumulative impacts to land tenure adjustment in this area in recent years.

Issue 2: Access & Transportation

Acquisition of the inholdings and edgeholdings would provide additional miles of roads and trails for access to the monument and similar areas in the Planning Area. The full extent of road and trail access to areas outside the Decision Area is unknown at this time.

Issue 3: Recreational Activities

Visitor use would likely increase slowly over time. The capacity of the monument to handle visitor use would be increased if inholdings and edgeholdings were acquired, and facilities and management were improved.

In addition to the monument visitors, Cochiti Lake facilities were reported to have been visited in 2003 and 2004 by 380,000 and 310,000 people respectively. (Note: The reduction in visitation from 2003 to 2004 is said to have been the result of a faulty counters.) The Santa Fe National Forest reports visitors to the forest and on the Dome Wilderness, but the reports available do not indicate visitors by location. Therefore, visitor numbers that might be cumulative with those to the Kasha-Katuwe Tent Rocks National Monument could not be determined. Bandelier National Monument reported visits for 2002 at 291,436; 2003 at 287,096; and 2004 at 263,285, respectively (with no explanation of the decreasing number of visits). The Bandelier entrance is far enough from the Kasha-Katuwe Tent Rocks National Monument that the cumulative effect of Bandelier's figures on Kasha-Katuwe would likely be negligible.

Issue 4: Ecosystem Restoration

Vegetative treatments would be done on 610 acres within the Decision Area under this alternative. If the lands recommended for

acquisition were acquired, the potentially treatable acres would be increased to 2,166 acres. The U.S. Forest Service also would be expected to have treatable areas on the Santa Fe National Forest, but the acreage and location has not been specified.

The cumulative impacts of grazing removal, vegetation treatments, and timely road maintenance would improve watershed condition in both the short and long terms. If vegetation treatments were carried out with wheels or tracks, some short-term disturbance to the soil surface would temporarily increase erosion and sedimentation.

Issue 5: American Indian Uses & Traditional Cultural Practices

Intrusions created by the monument's main road (BLM Road 1011) would reduce the level of privacy in the portion of the national monument that has been used for traditional purposes. Estimating the size of this area on which privacy has been reduced is somewhat speculative, but assuming that the intrusions ran the full length of BLM Road 1011 (5.9 miles), and assuming the area of disturbance extended $\frac{1}{2}$ mile on each side of the road, the full size of the disturbed area could be as much as 3,776 acres. If the disturbance only extended $\frac{1}{8}$ mile on each side of the road, the total area of disturbance could be as small as 944 acres. The completion of the recommended acquisitions could more than double the potential area of intrusion.

The land transfer to Santo Domingo Pueblo mentioned above under Issue 1 is also part of the cumulative impacts to American Indian uses and traditional cultural practices that have occurred in this area in recent years.

ALTERNATIVE C

Access & Transportation

The road and trails management program would continue with minimal improvements to these means of access in the monument. Roads would

be designated as "Open" or "Limited" (open for limited use only), or they would be designated as "Closed" and would be rehabilitated by natural or mechanical processes. The BLM and/or Sandoval County would continue to maintain the roads that were designated as "open."

To enhance and protect the ecological condition of woodlands and other vegetation Under Alternative C, the BLM would substantially reduce the number of miles of roads that would open under Alternative A. Approximately 9.15 miles of roads would be designated as "Open" for public use and about 2.4 miles would be designated as "Limited." This would be a total reduction of 40 percent of the road miles open for public and/or administrative use, from 19.16 miles under Alternative A to 11.55 miles under Alternative C.

About 7.61 miles of roads would be closed, with Best Management Practices being used to restore better ecological conditions where erosion has been a problem. Some of the roads to be closed have shown natural recovery capabilities that would be allowed to continue. These road changes would increase the acreage available within the ROS motorized category by approximately 293 acres and decrease the non-motorized area by the same amount.

The miles of foot trails that would remain open would be increased by 1.4 miles to 9.66 miles. Increased public trail access would likely result in increased trespass on nonfederal land. Reduced road access to remote areas would decrease the possibility of public safety concerns, but would increase the number of areas that were not easily accessible to emergency and rescue equipment.

Impacts from American Indian Uses & Traditional Cultural Practices

Nearly half the road miles would be in portions of the monument with high traditional use values. Infrequent short-term closures could be requested on these or other roads and trails. (Note: These closures would be announced on the BLM website, the customer service tele-

phone line and local radio stations, and on signs posted outside the gate at the monument entrance on Tribal Road 92. Visitors would be encouraged to go to nearby Cochiti Lake or the Cochiti Golf Course and Clubhouse until BLM Road 1011 was reopened.) The impacts of these closures on access by the general public would be negligible.

Under Alternative C, the usual BLM consultation procedures would be in effect, under which affected tribes or pueblos are consulted regarding their concerns about proposed access and transportation activities. These consultations with tribes would be the same under all the alternatives.

Impacts from Cultural Resources

Standard cultural resource practices would require inventory of closed roads before surface-disturbing rehabilitation work. The special cultural resources requirement for inventory of existing roads before maintenance would require Class III survey of an additional 97 acres adjacent to 7.95 miles of roads and easements.

Impacts from Lands & Realty (Land Tenure Adjustment)

Under Alternative C, the BLM would seek an easement for 1.05 miles of road on privately owned inholdings within the monument boundary. This easement would provide federal control of legal access for the main road through the monument.

Under this alternative an additional 1.4 miles of road easement would be acquired for a northeastern access to the monument (refer to Map 8 in the map pocket). This easement would be outside the monument boundary, but would provide a secondary entrance to the monument that would help to disperse visitors and be likely to increase visitor use.

Impacts from Recreational Uses

Alternative C would provide for continued intensive recreational use associated with desig-

nated roads and trails. Improvement and maintenance of the 5.9 miles of BLM Road 1011 would be needed as the result of the recreational traffic volumes into the area. Implementation of Alternative C would accommodate some increase in recreational visits, and ensure uninterrupted entrance to the monument on both BLM Road 1011 and a new northeast entrance road.

Impacts from Visual Resources

The monument under Alternative C would be assigned VRM Class II on 2,004 acres and Class III on 2,120 acres. The Class II acres would require reduced levels of visual intrusion but neither management class would require roads to be closed nor access impaired to protect visual resources.

Impacts from Wildlife Habitat

Habitat management would impact access and transportation in the western portion of the monument, where 2.1 miles of roads would be designated for “limited” use only to provide protected winter big game habitat. Public access would be limited in this part of the monument. Another impact on access and transportation would be traffic controls such as speed limits at wildlife crossings.

American Indian Uses & Traditional Cultural Practices

Impacts from Access & Transportation

The principal impacts to American Indian uses and traditional cultural practices under Alternative C would be intrusion and the loss of privacy resulting from recreational visitation. (Refer to Table 4-2 under Alternative A for factors directly affecting traditional uses under each alternative.) Although the BLM would limit visitation to about 50,000 visits per year (more if significant new acreage is added through land tenure adjustment), the agency also proposes under this alternative that a new access route be built into the northeast corner of the monument (refer to Map 8). This route would pass near important

traditional use areas and would likely be more disruptive to those using the areas for traditional purposes than visitation elsewhere in the monument. Consultations with tribes would be ongoing under any alternative selected. Under Alternative C, brief temporary closures of the national monument could be made to accommodate traditional uses.

Impacts from Lands & Realty (Land Tenure Adjustment)

Land tenure adjustments would likely affect privacy and intrusions related to traditional uses and practices. However, the magnitude of those impacts would be related to the types of uses permitted on acquired land, whether inholdings or edgeholdings. Permitted uses would minimize intrusion while allowing use and protection of monument resource values.

Cultural Resources

Impacts from Access & Transportation

Under Alternative C, 9.15 miles of roads would remain open and 2.4 miles would be designated as “Limited” (open for limited use only). The BLM has inventoried a total of 5.3 miles, and taken actions to protect the archeological sites adversely impacted by road maintenance along BLM Road 1011. As under Alternative B, if archeological sites were located along the remaining 6.25 miles of road, maintenance of the road could damage or destroy them. Under Alternative C, the remaining sections of road designated as open or open to limited use would be inventoried by 2008. Any rehabilitation activities associated with closures of 7.61 miles of road would also be subject to cultural resources inventory and mitigation under the terms of the BLM’s cultural resources protocol agreement with the State Historic Preservation Officer.

About 9.66 miles of existing trails would remain open, of which 1.81 miles have been inventoried for cultural resources. The most serious potential effects of the trail system would be the indirect impacts (illegal collection) discussed under

“Impacts from Recreational Uses” above in Alternative A. Mitigation would consist of inventorying a 60-meter-wide corridor centered on these trails and carefully recording any sites found there. The .4 mile of trail proposed for closure under Alternative B has already been inventoried, and no cultural resources would be affected by their rehabilitation.

Impacts from American Indian Uses & Traditional Cultural Practices

Under Alternatives B and C, the BLM would discourage projects that involved excavation or collection of artifacts. This policy could limit opportunities for archeological research. If the Cañada de Cochiti edgeholding was acquired, this limiting provision would apply to a large segment of the archeological record in this region.

Impacts from Fire Management, Noxious Weeds, Unique Geologic Features, and Vegetation & Woodland Management

The impacts on cultural resources from managing these other uses and resources would be the same under Alternative C as those discussed above under Alternative A.

Impacts from Lands & Realty (Land Tenure Adjustment)

Acquiring 1,278 acres of nonfederal surface inholdings within the national monument would enhance protection of cultural resources on these acres. Acquisition and withdrawal of mineral rights would also help protect cultural resources. Acquiring 10,233 acres of the northern edgeholding (the Cañada de Cochiti Grant) is recommended to bring additional sites under federal protection and management.

Acquisition of 1.05 miles of easement along BLM Road 1011 would not have direct impacts on cultural resources, but use and maintenance of transportation routes within this easement would have some impacts. These impacts are discussed above under “Impacts from Access and Transportation.”

Impacts from Recreational Uses

The nature of direct and indirect recreational impacts to cultural resources, as well as mitigation measures to decrease these impacts, is discussed above under Alternative A. Under Alternative C, visitation would be restricted to approximately 50,000 people per year for the life of the plan. A total of 9.66 miles of “Open” hiking trails would be available for use, rather than the 8.26 miles to be open under Alternative A.

Under Alternative C, the BLM would follow the same policies described above under Alternative B to mitigate both the direct and indirect impacts of recreational uses to cultural resources. Because the agency would be restricting visitor numbers to 50,000 people per year rather than accommodating the 150,000 people per year expected under Alternative A, the direct and indirect impacts to cultural resources would be somewhat reduced under Alternative C, even with the slightly increased mileage of open trails.

Fire Management/Ecosystem Restoration

Impacts from Access & Transportation

Under Alternative C, fire management could be used to increase vegetative diversity to a greater extent than under Alternative A, as fewer miles of roads would be open (9.15 miles instead of 18.11 miles). Visitor accessibility by road would be more limited in some areas available for vegetative treatment, although a slightly greater mileage of trails would be open under Alternative C than under Alternative A (9.87 miles instead of 8.26 miles).

Impacts from American Indian Uses & Traditional Cultural Practices, Cultural Resources, and Lands & Realty (Land Tenure Adjustment)

The impacts of managing these uses and resources on fire management under Alternative C would be the same as those discussed above under Alternative A.

Impacts from Livestock Grazing

Under Alternative C, livestock grazing could be used as needed to help achieve vegetative/ecosystem restoration objectives. This short-term use of non-native, noxious weeds and fine fuels (e.g., grasses) by grazing livestock would result in greater growth of native plant communities in the long-term. This plant growth could result in improved watershed conditions.

Impacts from Recreational Uses

The BLM would not use fire as a management tool for ecosystem restoration in the 280-acre intensive recreation use area.

Impacts from Vegetation & Woodland Management

The impacts of vegetation and woodland management on fire management under Alternative C would be the same as those discussed above under Alternative B.

Lands & Realty (Land Tenure Adjustment)

The BLM recognizes that nonfederal landowners would continue to have valid existing rights on federal lands.

Impacts from Access & Transportation, Livestock Grazing, and Water Resources

The impacts under Alternative C from these uses and resources would be the same as those described above under Alternative A.

Impacts from American Indian Uses & Traditional Cultural Practices, Minerals, Recreational Uses, and Visual Resources

The impacts under Alternative C from these other uses and resources would be the same as those described above under Alternative B.

Livestock Grazing

Impacts from Lands & Realty (Land Tenure Adjustment)

The impacts under Alternative C would be the same as those discussed above under Alternative A.

Recreational Uses

Impacts from Access & Transportation

The 11.55 miles of roads and 9.66 miles of trails would provide ready public access to 280 acres considered to be a concentrated recreational use area. A total of 3,385 acres would be accessible by motorized vehicle. As a result of this access, little of the monument would provide an experience of solitude.

The 9.66 miles of trails would provide public access to 739 acres that would form a dispersed use area beyond the concentrated use area. This dispersed use area would more favorably serve the needs of those who enjoyed hiking, and would positively impact recreational uses in the monument by distributing visitor use more widely.

Impacts from American Indian Uses & Traditional Cultural Practices, Lands & Realty (Land Tenure Adjustment), Unique Geologic Features, and Wildlife Habitat

The impacts from these resources and uses would be of the same type under Alternative C as those discussed above under Alternative A.

Impacts from Cultural Resources

Standard cultural resource practices would require survey of a 15-meter-wide strip along hiking and equestrian trails. Under Alternative C, survey of expanded buffer areas would require 190 acres of Class III inventory along 8.06 miles of trails, rather than the 48 acres that would be surveyed under standard practices.

The impact of an expanded cultural resources buffer survey around scenic viewing areas, picnic areas and similar developments would depend on their size. As an example, a facility 100 meters by 100 meters in size would require survey of 2.4 acres under standard practices, but 21 acres of survey under this alternative.

Impacts from Riparian Areas

The impacts would be the same under Alternative C as those discussed above under Alternative B.

Impacts from Visual Resources

On the 2,004 acres of the monument designated as VRM Class II, some limitations would be placed on the development of recreational facilities. The Class III VRM designation on 2,120 acres would require only that development did not draw attention away from the naturalness of the area.

Impacts from Water Resources

Under Alternative C, the BLM would develop water sources to provide drinking water that met the supply and quality needs of the visiting public. A total water requirement has not been estimated.

Social & Economic Conditions

Impacts from Livestock Grazing, Recreational Uses, and Unique Geologic Features

Under Alternative C, the impacts of these uses and resources on social and economic conditions would be the same as those discussed above under Alternative A.

Impacts from Visual Resources

Implementing Alternative C would provide a VRM Class III designation for 2,120 acres within the Decision Area. This would cause potential adverse impacts to scenic values from

the placement of structures and developments that did not blend with the features found in the surrounding landscape. This reduction in the visual values of the area would likely have a small impact on social conditions, although it would not likely impact economic conditions.

Threatened, Endangered & Sensitive Wildlife Species

The impacts on these species of the actions proposed under Alternative C would be the same as those discussed above under Alternative A, with the following exceptions. Acquiring the state and private inholdings and edgeholdings would protect an additional 11,592 acres within and adjoining the monument from habitat fragmentation that could result from development on those lands. Acquiring the southwest edgeholding would also allow the BLM to control access to the road that enters Section 31, T. 17. N., R. 5 E. from the south.

Unique Geologic Features

Impacts from Access & Transportation

The impacts of this use on unique geologic features would be the same under Alternative C as those discussed above under Alternative B, with the following exceptions.

The miles of roads and trails open for public use under Alternative C would reduce the level of protection for the unique geologic features. Public access to 175.7 acres of unique geologic resources could result in damage or destruction. On the other hand, a greater opportunity for observance and study of these resources would be provided. Recommended acquisitions would expand this acreage by 193.5 acres of inholdings and 903.4 acres of edgeholdings, with similar impacts there.

If trails or roads were built near these unique features in the future, indirect impacts could include erosion and resultant damage. Monitoring

would provide information to guide mitigation and protective measures.

Impacts from Cultural Resources, Fire Management, Lands & Realty (Land Tenure Adjustment), Recreational Uses, and Wildlife Habitat

The impacts on unique geologic features of managing these uses and resources under Alternative C would be the same as those discussed above under Alternative A.

Impacts from Visual Resources

Continuing to manage 2,004 acres of the monument under VRM Class II objectives would help to protect the areas with unique geologic features from disturbance.

Vegetation & Woodland Management

Impacts from Fire Management

Under Alternative C, the impacts of fire management on vegetation and woodland management would be the same as those discussed above for Alternative B.

Impacts from Noxious Weeds, Recreational Uses, and Wildlife Habitat

Refer to the discussions of the impacts of these elements above under “Vegetation and Woodland Management” for Alternative A.

Impacts from Livestock Grazing

The use of short-term livestock grazing within the monument would benefit long-term vegetation management by increasing the growth of native plants.

Impacts from Visual Resources

The assignment of VRM Class II to 2,004 acres within the Decision Area would restrict to some small degree the types and extent of vegetative treatment areas.

Visual Resources

Impacts from Fire Management/Ecosystem Restoration, Lands & Realty (Land Tenure Adjustment), Livestock Grazing, Unique Geologic Features, and Vegetation & Woodland Management

For visual resources, the impacts of managing the above resources and uses would be the same under Alternative C as those described above under Alternative A.

Impacts from Recreational Uses

Implementation of Alternative C would result in 2,004 acres (almost half the federal lands administered by the BLM within the monument) being assigned VRM Class II. The monument's scenic values would be protected by limiting actions to those that would be low level, not attracting attention.

The remaining 2,120 acres of federal lands administered by the BLM would be assigned VRM Class III, which would allow for expansion of visitor use facilities. Such facilities and resource protection measures in the areas of intensive recreational use would result in changes that would attract attention but not dominate the viewshed. The visual effects of recreational activities and developments would contribute to the loss of the general natural appearance in these Class III areas (refer to Map 17 in the map section).

Water Resources

Impacts from Access & Transportation, Lands & Realty (Land Tenure Adjustment), Livestock Grazing, Recreational Uses, and Vegetation & Woodland Management

The impacts of these uses to water resources under Alternative C would be the same as those discussed above under Alternative B.

Wildlife Habitat

Impacts from Access & Transportation

Management of the monument with approximately 11.55 miles of roads on the 4,124 federal acres would result in a road density of approximately 1.8 miles of road per square mile of land. A total of 9.7 miles of trails also would be used, resulting in considerable fragmentation of the wildlife habitat.

Impacts from Lands & Realty (Land Tenure Adjustment)

The impacts of these uses on wildlife habitat under Alternative C would be the same as those discussed above under Alternative A.

Impacts from Recreational Uses, and Vegetation & Woodland Management

The impacts of these uses on wildlife habitat under Alternative C would be the same as those discussed above under Alternative B.

Cumulative Impacts Under Alternative C

Little difference in the cumulative impacts would result from implementing Alternative C rather than Alternative B, except with regard to two of the five issues being addressed in this plan. The first issue with different cumulative impacts would be ***Issue 3, Recreational Activities***. Under an adaptive management approach, the BLM would monitor visits, visitor responses, facilities and management practices, and their impacts to natural resource conditions for a 5-year period. At the end of this period, the agency would evaluate the monitoring results. The cumulative number of visits allowed per year could be reduced, if the monitoring results indicated a need to do so to minimize natural resource degradation.

Also expected would be different cumulative impacts to *Issue 5, American Indian Uses and Traditional Cultural Practices*. Under Alternative C, a new access road that would pass near important traditional use areas is proposed.

Travel on this road by visitors and other users could disrupt traditional uses to a more serious extent than the use on roads open to public access under Alternatives A and B.